

WHAT IS CLAIMED IS:

1. A differential drive type semiconductor optical modulator comprising:

5 a differential driver circuit having a first and a second output terminals which can output a pair of differential signals;

a transmission-line substrate having a first transmission line connected to the first output terminal, a second transmission line connected to the second output terminal and a ground line;

10 a first semiconductor modulator connected between the first transmission line and the ground line, mounted on the transmission-line substrate; and

a second semiconductor modulator connected between the second transmission line and the ground line, mounted on the transmission-line substrate; the first and second semiconductor modulators being arranged in series along a common optic axis

20 wherein a first terminal resistor connected between a terminal end of the first transmission line and the ground line, a second terminal resistor connected between a terminal end of the second transmission line and the ground line, a first inductance interposed between the first semiconductor modulator and the first terminal resistor, and a second inductance interposed between the second semiconductor

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modulator and the second terminal resistor are provided on the transmission-line substrate.

2. The differential drive type semiconductor optical modulator according to Claim 1, wherein the first
5 semiconductor modulator is arranged in the optical incident side of the optic axis rather than the second semiconductor modulator, and the optical path length of the first semiconductor modulator is shorter than the optical path length of the second semiconductor modulator.

10 3. The differential drive type semiconductor optical modulator according to Claim 1 further comprising:

an optical modulator integrated device in which the first and second semiconductor modulators and an optical waveguide for optically connecting the first and second
15 semiconductor modulators are integrated.

4. The differential drive type semiconductor optical modulator according to Claim 3, wherein each of driving
electrodes of the first and second semiconductor modulators is arranged on the principal plane of the optical modulator
20 integrated device.

5. The differential drive type semiconductor optical modulator according to Claim 4, wherein the optical modulator integrated device is mounted on the transmission-line substrate by flip-chip mounting.

25 6. The differential drive type semiconductor optical

modulator according to Claim 1, wherein the first and second inductances are formed of slimmed portions in the transmission lines.

7. The differential drive type semiconductor optical modulator according to Claim 1, wherein the first and second semiconductor modulators are mounted onto the close proximity of the first and second inductances.

8. The differential drive type semiconductor optical modulator according to Claim 1, wherein an electric delay portion due to the difference in path-length is provided in at least one of the first and second transmission lines.

9. The differential drive type semiconductor optical modulator according to Claim 1, wherein a phase inverter for inverting phase of signal is provided in at least one of the first and second transmission lines.

10. The differential drive type semiconductor optical modulator according to Claim 1, wherein the differential signal from the differential driver circuit is an RZ signal.